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IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION

COURT 21 AM 9 52
DISTRICT COURT

BALLY MANUFACTURING CORPORATION,)
)
Plaintiff,)
)
v.)
)
D. GOTTLIEB & CO. and)
WILLIAMS ELECTRONICS, INC.)
)
Defendants.)

CIVIL ACTION NO. 78 C 2246

PLAINTIFF'S SUPPLEMENTAL RESPONSES, TO
DEFENDANT WILLIAMS' FIRST INTERROGATORIES

Plaintiff, Bally Manufacturing Corporation, hereby supplements its responses to Interrogatory No. 1(B) of the First Interrogatories of defendant Williams Electronics, Inc., as follows:

INTERROGATORY NO. 1. With regard to the patent in suit:

- (B) apply each claim allegedly infringed, element by element, to the Williams processor controlled pinball game, specifically referring to the circuit components (as shown in the material submitted herewith or such other material as may be available to plaintiff) which correspond to each claim element;

Response:

This response is based on the Stipulation between plaintiff and defendant Williams filed on February 16, 1979, under which material has been supplied by Williams disclosing an example of the construction of a "Disco Fever" pinball game made and sold by defendant Williams since the patent in suit issued. In applying the claim language to this material, this response reflects plaintiff's contentions as presently advised and as defendant's pinball game is presently understood in regards to its construction and operation. Because plaintiff has not completed its discovery with respect to the construction and operation of the Williams pinball games and has not yet been able to take depositions of Williams employees with respect thereto, plaintiff reserves its right to modify its responses should it acquire a different understanding in respect to defendant Williams' pinball games as discovery proceeds further.

Claim 1. A game apparatus comprising:
a processor having program means for programming the processor and memory means for storing signals;

Components shown in the
CPU Board Logic Diagrams
including IC's 1, 13, 16, 17,
19, 20, 21 and 22, IC's 26
and 14 for "later games",
and other related components.

a physical mass capable
of motion;

player-operated control
means for affecting the
motion of the physical
means;

a plurality of response
means for detecting the
mass, each response means
having signaling means
associated therewith and
operatively connected to
the processor for signaling
the processor that the
response means has detected
the mass;

The ball.

Components shown on page 36
(Disco Fever Manual) including
the flipper assembly D-7060,
components shown in the Solenoid
Schematic Diagram including the
flipper switches and flipper
solenoids, and other related
components.

Assemblies shown on page 36
(Disco Fever Manual) including
those assemblies associated
with ball responsive switches
enumerated 9-29, 33-35 and
38-40 on page 19 (Disco Fever
Manual), components shown in
the Playfield Switch Wiring
Diagram including the ball
responsive switches enumerated
9-29, 33-35 and 38-40, components
shown in the Driver Board Logic
Diagram (sheet 1 of 2) including

IC's 11 and 15-18, components shown in the CPU Board Logic Diagrams including the address and data buses, and other related components.

a plurality of display means for presenting information based upon the detection of the mass by the response means, each display means having a display activation means associated therewith and operatively connected to the processor for activating the display means in response to a signal from the processor; and

Components shown in the Playfield Lamp Wiring Diagram including lamps enumerated 5-48, components shown in the Insert Board Diagram including the six digit displays for the scores of the four players, components shown in the Driver Board Logic Diagram (sheet 1 of 2) including IC 10 and transistors Q's 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75 and 77, components shown in the CPU Board Logic Diagram including IC's 6 and 18, components shown in the Master Display Schematic Diagram including IC's 4 and 9-13, and other related components.

multiplexing means operatively connected to the processor for cyclicly and sequentially enabling each of the signaling means to signal the processor that its associated response means has detected the mass, and for cyclicly and sequentially enabling each of the display activation means to activate its associated display means;

said processor having means for storing the signals from the signaling means enabled by the multiplexing means into the memory means, for addressing the program means and the memory means, and for signaling the display activation means enabled by the multiplexing means, in response to the program means and the memory means.

Components shown in the Playfield Switch Wiring Diagram including the diodes, components shown in the Driver Board Logic Diagram (sheet 1 of 2) including IC's 10 and 11, components shown in the CPU Board Logic Diagrams including IC's 1, 6, 17, 18, 20, 21 and 22 and IC's 14 and 26 ("later games"), components shown in the Playfield Lamp Wiring Diagram including the diodes, and other related components.

Components shown in the CPU Board Logic Diagram including IC's 1 and 18, the address and data buses, components shown in the Driver Board Logic Diagram (sheet 1 of 2) including IC's 10 and 11, and other related components.

2. The apparatus of claim 1 wherein the signaling means associated with the respective response means are operatively connected as a plurality of sets of elements in a matrix,

the multiplexing means having means for cyclicly and sequentially enabling each set of elements of the matrix.

3. The apparatus of claim 1 wherein the display activation means associated with the respective display means are operatively connected as a plurality of sets of elements in a matrix,

Components shown in the Playfield Switch Wiring Diagram including the aforementioned ball responsive switches, components shown in the Driver Board Logic Diagram (sheet 1 of 2) including the aforementioned IC's 15-18, and other related components are so connected.

Components shown in the Playfield Switch Wiring Diagram including the aforementioned diodes, components shown in the Driver Board Logic Diagram (sheet 1 of 2) including the IC 11 output lines PB0-PB7, and other related components.

Components shown in the Playfield Lamp Wiring Diagram including the aforementioned lamps, components shown in the Driver Board Logic Diagram (sheet 1 of 2) including the aforementioned

transistors, components shown in the Insert Board Diagram including the aforementioned six digit displays, components shown in the Master Display Schematic Diagram including the aforementioned IC's 4 and 9-13, and other related components are so connected.

the multiplexing means having means for cyclicly and sequentially enabling each set of elements of the matrix..

Components shown in the Playfield Lamp Wiring Diagram including the aforementioned diodes, components shown in the Driver Board Logic Diagram (sheet 1 of 2) including output lines PB0-PB7 of IC 10, components shown in the CPU Board Logic Diagrams including output lines 0-15 of IC 6 and other related components are so connected.

4. The apparatus of claim 3 further comprising a display drive circuit operatively connected to the processor having a plurality of outputs, each output being connected to a display activation means in

Components shown in the Driver Board Logic Diagram (sheet 1 of 2) including Darlington transistors Q's 46, 48, 50, 52, 54, 56, 58,

each set of elements, for selectively driving the display activation means within the set of elements enabled by the multiplexing means, as determined by a signal from the processor.

5. The apparatus of claim 4 wherein the processor further comprises an input and output circuit means operatively connected to a port of the processor and having a register for temporarily storing signals from the processor representative of the display drive outputs to be activated before transferring the signals to the display drive circuit,

and means for transferring said signals to said display drive circuit.

6. The apparatus of claim 3 wherein the multiplexing means for cyclicly and sequentially enabling each set of elements operates at a frequency such that a cyclicly activated display means appears to be continuously active.

60, 62, 64, 66, 68, 70, 72, 74 and 76, components shown in the Master Display Schematic Diagram including IC's 5 and 8, and other related components.

Components shown in the Driver Board Logic Diagram including IC 10, components shown in the CPU Board Logic Diagrams including IC 18, the address and data buses and other related components.

Components shown in the Driver Board Logic Diagram including IC 10 output lines PA0-PA7, components shown in the CPU Board Logic Diagrams including IC 18 output lines PB0-PB7.

The display lamps and displayed digits presumably do not appear to flicker when activated but instead appear to be continuously on when activated.

8. The apparatus of claim 1 wherein said multiplexing means has an enabling rate sufficient to maintain an apparently continuous presentation of information by a plurality of display means simultaneously.

The same response as for Claim 6 above applies.

11. The apparatus of claim 1 wherein the processor further includes synchronizing means for synchronizing the multiplexing means with the processor means for signaling the display activation means enabled by the multiplexing means.

Components shown in the CPU Board Logic Diagrams including IC 1 and lines connecting IC 18 to IC 1, components shown in the Driver Board Logic Diagram (sheet 1 of 2) including lines connecting IC 10 to IC 1 of the CPU Board Logic Diagrams, and other related components.

12. The apparatus of claim 11 wherein a display means comprises a lamp, said apparatus comprising a lamp drive circuit

Components shown in the Driver Board Logic Diagram (sheet 1 of 2) including Q's 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74 and 76.

and said synchronizing means further comprising means for synchronizing the lamp drive circuit with the multiplexing means and the processor means for signaling the display activation means enabled by the multiplexing means.

The same response as for Claim 11 applies wherein the aforementioned components shown in the Driver Board Logic Diagram (sheet 1 of 2) further include IC's 13 and 14.

13. The apparatus of claim 1 wherein a signaling means of the response means comprises a voltage source

Components shown in the Driver Board Logic Diagram (sheet 1 of 2) including IC's 17 and 18, and other related components.

and a switch operable by the response means.

The ball responsive switches 9-29, 33-35 and 38-40 shown in the Playfield Switch Wiring Diagram.

15. The apparatus of claim 1 wherein the processor further has an input and output circuit means operatively connected to a port of the processor and having a register for storing input signals from the signaling means before transferring the signals to the port of the processor,

Components shown in the Driver Board Logic Diagram (sheet 1 of 2) including IC 11, and other related components.

and means for transferring said signals to said port.

Components shown in the Driver Board Logic Diagram (sheet 1 of 2) including IC 11, components shown in the CPU Board Logic Diagrams including IC 1, the address and data buses, and other related components.

16. The apparatus of claim 1 wherein the physical mass comprises a ball,

The ball.

said apparatus further comprising a downwardly inclined playing field,

The playing field 14 shown on pages 3 and 36 (Disco Fever Manual).

and means for ejecting the ball to the upper end of the playing field whereby the ball may roll downwardly under the force of gravity across the playing field.

The ball shooter 16 shown on page 3 and other related components.

22. The apparatus of claim 1 wherein the detection of the physical mass by a response means is assigned a score and the plurality of display means includes multiple digit scoring means for displaying digits representing a player's score.

Components shown in the Insert Board Diagram including the six digit displays for the four players' score, and other related components.

23. The apparatus of claim 22 wherein the multiple digit scoring means comprises a plurality of single digit display means for displaying a digit of a player's score, each single digit display means being energized one digit at a time.

Components shown in the Insert Board Diagram including individual digit displays of the aforementioned six digit displays, and other related components.

24. The apparatus of claim 23 wherein the single digit display means comprises a segmented digit display

Components shown in the Insert Board Diagram including the individual digit displays of the aforementioned six digit displays, and other related components.

and the display activation means for each segmented digit display comprises a digit drive circuit having a plurality of inputs and outputs corresponding to the segments of the digits.

25. The apparatus of claim 24 further comprising a segment drive circuit operatively connected to the processor for driving the inputs as determined by the processor of each of the digit drives when the digit drive is enabled by the multiplexing means.

26. The apparatus of claim 25 wherein the processor further comprises an input and output circuit means operatively connected to the processor and having a register for temporarily storing the signals from the processor representative of the digit to be displayed before transferring the signals to the segment drive circuit,

and means to transfer said signals to said segment drive circuit.

27. The apparatus of claim 1 wherein the display activation means associated with a display means comprises a power source

Components shown in the Master Display Schematic Diagram including IC 9 and IC 10, and other related components.

Components shown in the Master Display Schematic Diagram including IC's 5 and 8, and other related components.

Components shown in the CPU Board Logic Diagrams including IC 18, and other related components.

Components shown in the CPU Board Logic Diagrams including IC 18 output lines PB0-PB7.

Components shown in the Power Supply Schematic Diagram including the minus 100 VDC power supply, and other related components.

and a transistor switch means for operatively coupling the power source and the display means in response to the signal from the processor;

the multiplexing means comprising a decoder for completing the circuit of the power source, transistor switch means and the display means.

33. The apparatus of claim 1 wherein the processor further includes an interrupt input port,

said apparatus further comprising monitoring means for determining the status of a condition of the apparatus

and having signaling means operatively connected to the interrupt port of the processor for signaling the processor with respect to the condition.

39. The apparatus of claim 33 wherein the processor further includes interrupt means responsive to the signaling means supplied to the interrupt port for providing immediate processing of a condition determined by the monitoring means.

Components shown in the Master Display Schematic Diagram including IC 9 and IC 10, and other related components.

Components shown in the CPU Board Logic Diagrams including IC 6 and other related components.

Components shown in the CPU Board Logic Diagrams including the IC 1 port labeled \overline{IRQ} , and other related components.

Components shown in the CPU Board Logic Diagrams including IC 23 and other related components.

Components shown in the CPU Board Logic Diagrams including IC 23, and other related components.

Components shown in the CPU Board Logic Diagrams including IC 1, and other related components.

45. A pinball game comprising a processor having programming means and memory means;

Components shown in the CPU Board Logic Diagrams including IC's 1, 13, 16, 17, 19, 20, 21 and 22, IC's 26 and 14 for "later games", and other related components.

a ball;

The ball.

a downwardly inclined playing field;

The playfield 14 shown on pages 3 and 36 (Disco Fever Manual).

player operated means for ejecting the ball on to the playing field whereby the ball may roll downwardly;

Components shown on page 3 (Disco Fever Manual) including the ball shooter, and other related components.

a plurality of response means for detecting the ball and having signaling means associated therewith and operatively connected to the processor for signaling the processor that the response means has detected the ball;

Assemblies shown on page 36 (Disco Fever Manual) including those assemblies associated with ball responsive switches enumerated 9-29, 33-35 and 38-40 on page 19 (Disco Fever Manual), components shown in the Playfield Switch Wiring Diagram including the

ball responsive switches
enumerated 9-29, 33-35 and
38-40, components shown in the
Driver Board Logic Diagram
(sheet 1 of 2) including IC's
11 and 15-18, components shown
on the CPU Board Logic Diagrams
including the address and data
buses, and other related
components.

a plurality of display
means for presenting
information based upon the
detection of the ball by
the response means and
having display activation
means associated therewith
and operatively connected
to the processor for acti-
vating the display means
in response to a signal
from the processor;

Components shown in the Playfield
Lamp Wiring Diagram including
lamps enumerated 5-48, components
shown in the Insert Board Diagram
including the six digit displays
for the scores of the four players,
components shown in the Driver
Board Logic Diagram (sheet 1 of 2)
including IC 10 and transistors,
Q's 47, 49, 51, 53, 55, 57, 59,
61, 63, 65, 67, 69, 71, 73, 75
and 77, components shown in the
CPU Board Logic Diagrams including
IC's 6 and 18, components shown

in the Master Display Schematic Diagram including IC's 4 and 9-13, and other related components.

and multiplexing means operatively connected to the processor for cyclicly and sequentially enabling the signaling means to signal the processor that its associated response means has detected the ball, and for cyclicly and sequentially enabling the display activation means to activate its associated display means;

said processor having means for storing the signals from the signaling means enabled by the multiplexing means in the memory means, for addressing the program means and the memory means, and for signaling the display activation means enabled by the multiplexing means, in response to the program means and the memory means.

Components shown in the Playfield Switch Wiring Diagram including the diodes, components shown in the Driver Board Logic Diagram (sheet 1 of 2) including IC's 10 and 11, components shown in the CPU Board Logic Diagrams including IC's 1, 6, 17, 18, 20, 21 and 22 and IC's 14 and 26 ("later games"), and other related components.

Components shown in the CPU Board Logic Diagrams including IC's 1 and 18, the address and data buses, components shown in the Driver Board Logic Diagram (sheet 1 of 2) including IC's 10 and 11, and other related components.

47. The game of claim 45 wherein said multiplexing means has an enabling rate sufficient to maintain an apparently continuous presentation of information by a plurality of display means simultaneously.

The same response as for Claim 6 above applies.

52. A pinball game comprising a digital processor having programming means for programming the processor, and memory means for storing signals;

Components shown in the CPU Board Logic Diagrams including IC's 1, 13, 16, 17, 19, 20, 21 and 22, IC's 26 and 14 for "later games", and other related components.

a ball;

The ball.

a downwardly inclined playing field;

The playfield 14 shown on pages 3 and 36 (Disco Fever Manual).

player operated means for ejecting the ball onto the playing field whereby the ball may roll downwardly;

Components shown on page 3 (Disco Fever Manual) including the ball shooter, and other related components.

a plurality of response means for detecting the ball and having signaling means associated therewith and operatively connected to the processor for signaling the processor that the response means has detected the ball;

Assemblies shown on page 36 (Disco Fever Manual) including those assemblies associated with ball responsive switches enumerated 9-29, 33-35 and 38-40 on page 19 (Disco Fever Manual), components shown in the Playfield Switch Wiring Diagram including the ball responsive switches enumerated 9-29, 33-35 and 38-40, components shown in the Driver Board Logic Diagram (sheet 1 of 2) including IC's 11 and 15-18, components shown in the CPU Board Logic Diagrams including the address and data buses, and other related components.

and a plurality of display means for presenting information based upon the detection of the ball by the response means and having display activation means associated therewith and operatively connected to the processor for activating the display means in response to a signal from the processor;

Components shown in the Playfield Lamp Wiring Diagram including lamps enumerated 5-48, components shown in the Insert Board Diagram including the six digit displays for the scores of the four players, components shown in the Driver Board Logic Diagram (sheet 1 of 2)

including IC 10 and transistors,
Q's 47, 49, 51, 53, 55, 57, 59,
61, 63, 65, 67, 69, 71, 73, 75
and 77, components shown in the
CPU Board Logic Diagrams including
IC's 6 and 18, components shown
in the Master Display Schematic
Diagram including IC's 4 and
9-13, and other related components.

said processor having means
for transferring the signals
from the signaling means to
the memory means, for
addressing the program means
and the memory means, and
for signaling the display
activation means in response
to the program means and
memory means;

Components shown in the CPU
Board Logic Diagrams including
IC's 1 and 18, the address and
data buses, components shown in
the Driver Board Logic Diagram
(sheet 1 of 2) including IC's 10
and 11, and other related
components.

and the display activation
means associated with the
respective display means
and signaling means asso-
ciated with the respective
response means defining a
plurality of operable
elements, the game further
comprising multiplexing
means for cyclicly enabling
at least some of said ele-
ments to perform their
associated functions.

Components shown in the Playfield
Switch Wiring Diagram including
the diodes, components shown in
the Driver Board Logic Diagram
(sheet 1 of 2) including IC's 10
and 11, components shown in the
CPU Board Logic Diagrams including

IC's 1, 6, 17, 18, 20, 21 and 22 and IC's 14 and 26 ("later games"), components shown in the Playfield Lamp Wiring Diagram including the diodes, and other related components.

53. The game of claim 52 wherein said elements comprise said signaling means.

Components shown in the Playfield Switch Wiring Diagram including the aforementioned ball responsive switches, components shown in the Driver Board Logic Diagram (sheet 1 of 2) including the aforementioned IC's 11 and 15-18, components shown in the CPU Board Logic Diagrams including the aforementioned address and data buses, and other related components.

54. The game of claim 52 wherein said elements comprise said display activation means.

Components shown in the Driver Board Logic Diagram (sheet 1 of 2) including IC 10 and transistors, Q's 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75 and 77,

components shown in the Playfield Lamp Wiring Diagram, including the aforementioned lamps, components shown in the Insert Board Diagram including the aforementioned six digit displays, components shown in the Master Displays Schematic Diagram including IC's 4 and 9-13, and other related components.

55. The game of claim 52 wherein said elements comprise said signaling means and said display activation means.

Components shown in the Playfield Switch Wiring Diagram including the aforementioned ball responsive switches, components shown in the Driver Board Logic Diagram (sheet 1 of 2) including IC's 11 and 15-18, components shown in the CPU Board Logic Diagrams including the address and data buses, components shown in the Driver Board Logic Diagram (sheet 1 of 2) including IC 10 and transistors, Q's 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75 and 77, components

shown in the Playfield Lamp
Wiring Diagram including the
aforementioned lamps, components
shown in the Insert Board Diagram
including the aforementioned
six digit displays, components
shown in the Master Displays
Schematic Diagram including IC's
4 and 9-13, and other related
components.

BALLY MANUFACTURING CORPORATION

By William Konrad
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February 20, 1979

Chicago, Illinois